

NK8804
C38g



GARMENT DYEING

CASSELLA COLOR COMPANY

(American Branch of Leopold Cassella & Co)

183 and 184 Front Street

NEW YORK

Boston: 24 Essex Street.

Philadelphia: 153 and 155 South Front Street.

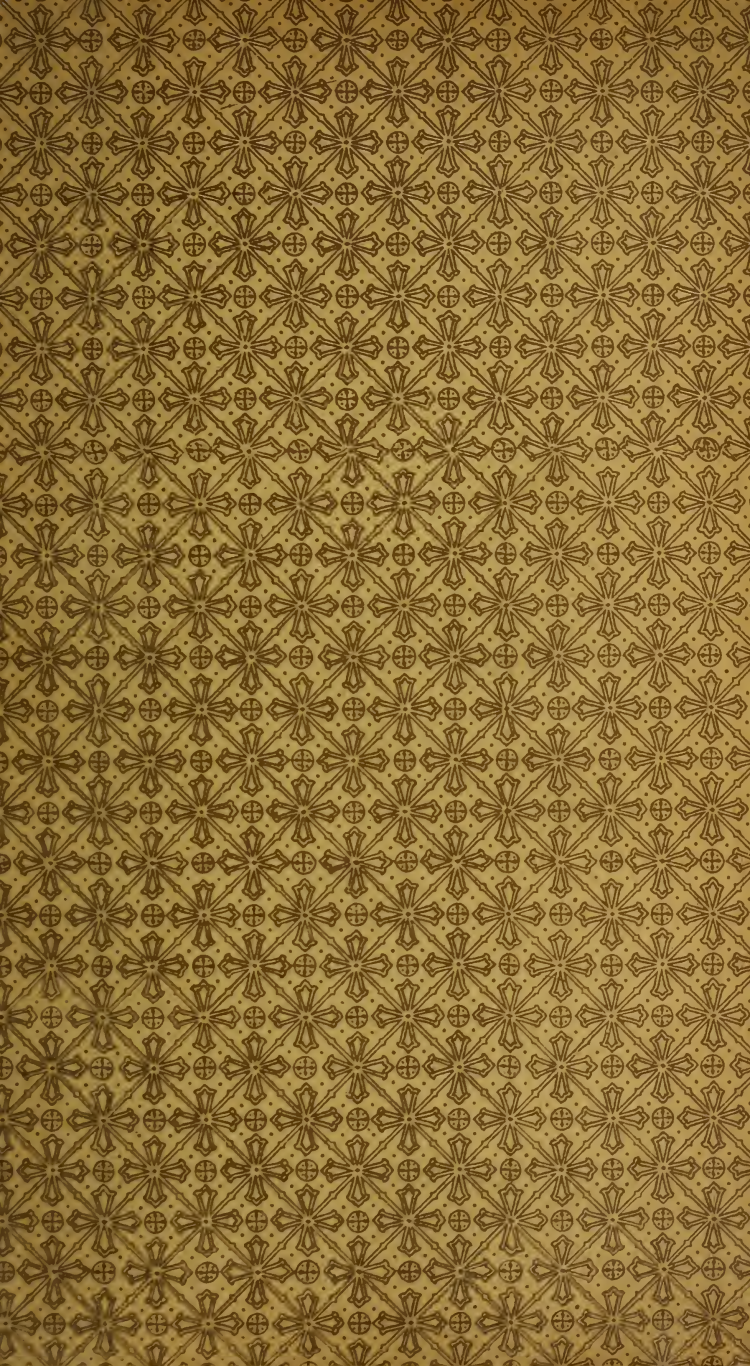
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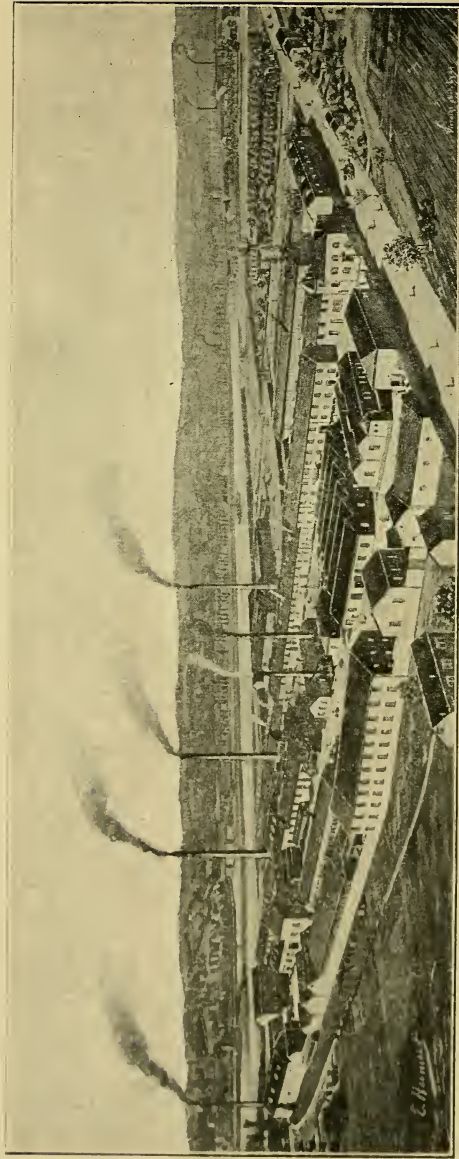


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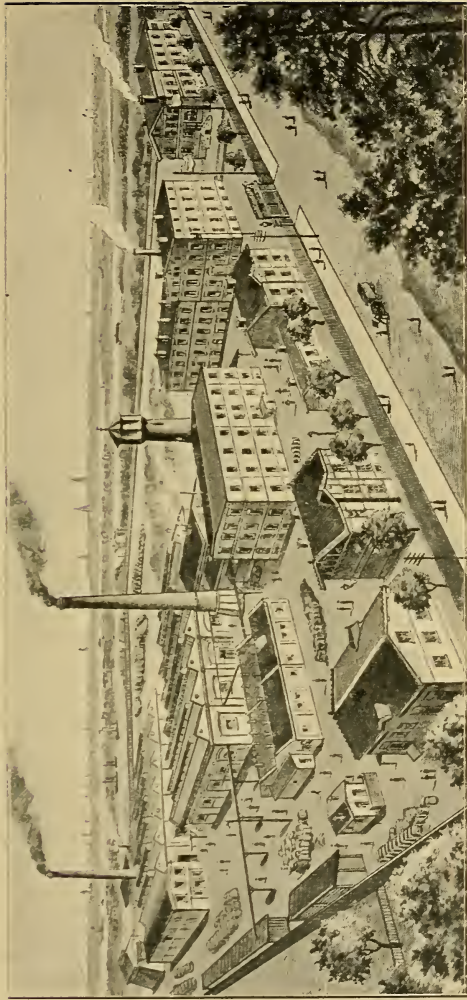
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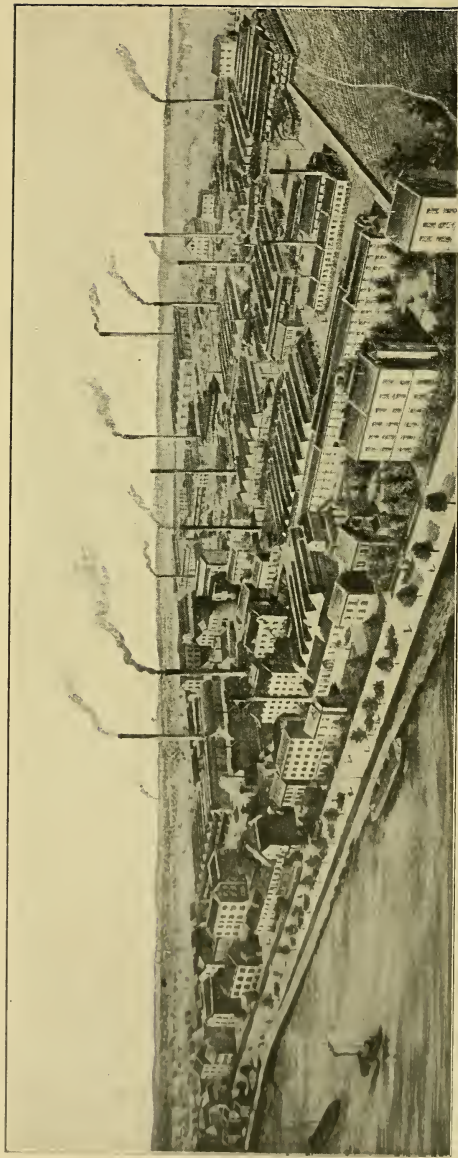
Works "La Mouche".

RUSSIAN ANILINE COLOUR WORKS LEOPOLD CASSELLA & CO., RIGA.



Works at Riga.

LEOPOLD CASSELLA & Co, FRANKFORT o. M.



Works at Mainkur near Frankfort o. M.

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(AMERICAN BRANCH OF LEOPOLD CASSELLA & C^o)

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ATLANTA: 47 NORTH PRYOR STREET

MONTREAL, P. Q.: 86 AND 88 YOVILLE SQUARE.

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Preface.

In the following pages we give some instructions for the employment of our dyestuffs in garment dyeing based upon experience collected in practical working.

The goods treated by this branch of the dyeing industry being in the majority of cases more or less tendered either by wear and tear or by solar and atmospherical influences, we have carefully selected the dyestuffs most suitable for re-dyeing purposes, and more especially such dyestuffs as possess the property of covering irregularities, dyeing easily level, and besides yielding full shades.

The dyeings shown on the following pages have all been produced on material in the grey, to which alone the recipes apply; as however in garment dyeing it is usually the question of re-dyeing goods that are already dyed, our recipes must in such cases be to some extent modified according to the ground shade of the material; this a competent man of some experience can with ease accomplish.

NOTE

NAPHTYLAMINE BLACK IS THE SCIENTIFIC NAME OF THE COLOR KNOWN COMMERCIALY AS ALIZARINE BLACK.

THE LANACYL COLORS ARE KNOWN COMMERCIALY AS ALIZARINE LANACYL COLORS.

I. The Dyeing of Wool and Unions.

In garment dyeing the following four methods are chiefly employed, each, as the case requires, yielding most excellent results.

- a) Dyeing in strongly acid baths.
- b) Dyeing in weakly acids baths.
- c) Dyeing in neutral baths.
- d) Dyeing with basic dyestuffs.

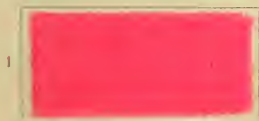
A) Dyeing in Strongly Acid Baths.

This is the oldest method and is principally applied to ladies' wearing apparel or to upholstery goods which have been previously stripped with soda ash and are intended to be dyed to a shade altogether different from the original. For this purpose the following dyestuffs are specially suitable.

Pinks, Reds and Clarets.

Bright shades of pink are chiefly obtained with Rosazeine B and 13.

For less bright shades, Lanafuchsine SB, SG, Brilliant Cochineal 2R and 4R are used.



0,5% Rosazeine B.*



0,1% Brilliant Cochineal 4R.

Bright scarlets may be obtained with various brands of Brilliant Scarlet and Brilliant Croceine, also with Brilliant Cochineal 2R and 4R.



3

2,5% Brilliant Scarlet 3R.



4

2,5% Brilliant Croceine 5B.



5

2,5% Brilliant Cochineal 2R.



6

2,5% Brilliant Cochineal 4R.

For dark or bluish reds, Lanafuchsine SG, SB, 6B, Naphtol Red C, EB, Azo Rubine A, Azo Red A, Brilliant Orseille C, Azo Orseille BB, Acid Magenta are particularly suitable.



7

3,5% Lanafuchsine SG.*



8

3,5% Lanafuchsine SB.*



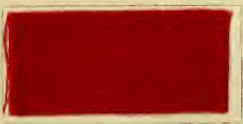
9

3% Azo Rubine A.



10

3% Naphtol Red C.



11

3% Azo Red A.



12

3% Azo Orseille BB.*



13

2,5% Acid Magenta.*



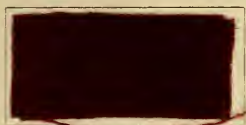
14

3,5% Brilliant Orseille C pat.*

The red dyestuffs marked with an asterisk * possess prominent levelling properties and are therefore excellently suitable for mixed and mode shades.

For clarets the last mentioned dyestuffs may be used and can be dulled or shaded with Azo Wool Violet 7R or 4B, or with the brands of Cyanole mentioned below, or, if required, with Cyanole Green B or 6G and Orange extra also.

15



3,5% Lanafuchsine S B
0,2% Orange extra
0,1% Cyanole Green B.

16



4 % Azo Rubine A
0,2% Cyanole extra pat.

17



4,4% Lanafuchsine S G
0,6% Azo Wool Violet 4B.

18



4,5% Azo Red A
0,5% Cyanole 6G.

All the dyestuffs enumerated above are very fast to light and alkalies with the exception of Acid Magenta, which is slightly inferior in this respect.

Pale Blue, Blue, Peacock, Navy and Dark Blue.

For pale blues either the various brands of Cyanole, especially Cyanole extra, FF and BB, or the Alkaline Blues R—6B are used, according to the shade required.

19



0,2% Cyanole FF pat.

20



1,5% Cyanole extra pat.

21



2,5% Cyanole BB pat.

22

2,5% Cyanole extra pat.
0,3% Azo Wool Violet 7R.

23



0,1% Alkaline Blue 6B.

24



2% Alkaline Blue R.

For medium blues the same dyestuffs are serviceable, and the Cyanoles can be shaded at will with Azo Wool Violet 7R.

For peacock, navy and dark blue, combinations of the following dyestuffs are useful, offering an extensive variety of shades: Cyanole, Thiocarmine, Azo Wool Blue B or SE, Cyanole Green, Fast Acid Green, Acid Green, Indigo Blue N and SGN along with Azo Wool Violet 7R or 4B, Lanafuchisine SG, SB and Brilliant Orseille C; for flattening these colours, Orange extra and GG are serviceable.

25



2,5% Thiocarmine R powder

26



3% Indigo Blue N pat.

27

2,5% Cyanole BB pat.
1,5% Cyanole Green 6G.

28

3% Indigo Blue SGN pat.
1% Azo Wool Violet 4B.

29

4,5% Indigo Blue SGN pat.
1,5% Lanafuchisine SB.

30



5% Azo Wool Blue B pat.

31



4,5% Fast Acid Green BN pat.
0,8% Azo Wool Violet 7R
0,1% Orange extra.

32



4,5% Indigo Blue SGN pat.
0,5% Lanafuchsine SB
0,3% Orange extra.

All these dyestuffs dye very easily level and are very fast to light and alkalies for most purposes.

Yellow and Orange.

For bright greenish yellows, Naphtol Yellow and Acid Yellow AT are used.

33



1% Naphtol Yellow S.

34



1,5% Acid Yellow AT.

For reddish yellows, Fast Yellow S, Indian Yellow G, R, Tropaeoline 00 are serviceable.

35



2% Fast Yellow S.

36



2% Indian Yellow G.

37



2% Indian Yellow R.

38



1,5% Tropaeolin 00.

For orange, the Orange R, extra, II and GG brands are used



2% Orange GG.



2% Orange extra.

These products dye very easily level and are very fast to alkalis, with the exception of Naphtol Yellow. The fastest to light amongst these dyestuffs are the Acid Yellow AT, Fast Yellow S and Orange GG.

Yellow and Orange being but seldom used as self colours, the above mentioned dyestuffs are chiefly applied for shading modes, browns, greens and olives.

Green and Dark Green.

Very pale green shades are dyed with Acid Green extra conc., extra conc. B and 5G.



2% Acid Green extra conc.



2% Acid Green 5G.

Bluish greens are suitably produced with Fast Acid Green B, BN, Cyanole Green B, 6G and S.



3% Fast Acid Green BN pat.

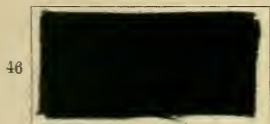


2,5% Cyanole Green B.



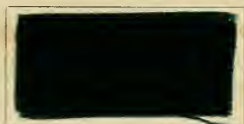
2,5% Cyanole Green 6G.

Dark greens can be dyed with the same dyestuffs if suitably flattened or darkened with Orange extra or GG, or with Lanafuchsine SG and Fast Yellow S.



46

3,5 % Fast Acid Green B N pat.
0,5 % Fast Yellow S
0,3 % Orange extra.



47

3,5 % Cyanole Green 6 G
0,5 % Fast Yellow S
1,5 % Indigo Blue N pat.

Of the above mentioned products, the Cyanole Greens are the best levelling, although the others are but very slightly inferior in this respect; in fastness to light the Cyanole Green brands are quite the best. The fastness to light of all the dyestuffs mentioned above is satisfactory.

Grey and Mode Shades.

These shades being chiefly pale ones, attention must be paid principally to level dyeing and best fastness to light. Combinations of Cyanole extra or Cyanole Green B with Orange GG or Fast Yellow S and Azo Orseille BB are especially suitable for greys.



48

0,1 % Cyanole extra pat.
0,05 % Azo Orseille BB.



49

0,2 % Cyanole Green B.
0,05 % Orange extra
0,07 % Azo Orseille BB.

For modes, combinations of Cyanole Green B, 6G with Orange extra, GG, Fast Yellow S and Acid Yellow AT and Lanafuchsine SG, SB or Azo Orseille BB are suitable.



50

0,2 % Cyanole extra pat.
0,3 % Orange GG
0,07 % Azo Orseille BB.



51

0,2 % Cyanole Green B
0,15 % Orange extra
0,04 % Azo Orseille BB.

Brown and Olive.

As no homogeneous dyestuffs yield any of these shades direct, it is always advisable to produce the desired shades by a combination of suitable dyestuffs, for which purpose we recommend the following products: Orange extra, Fast Yellow S, Indian Yellow, Lanafuchsine and Cyanole, Cyanole Green or Fast Acid Green BN; by varying the proportions almost any shade may be produced.

52



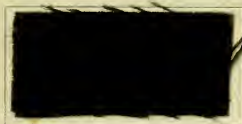
0,8 % Cyanole Green B
2 % Orange extra
1,8 % Lanafuchsine S G.

53



1,4 % Cyanole Green 6 G
2 % Orange extra
0,7 % Lanafuchsine S G.

54



3,5 % Fast Acid Green B N pat.
0,75 % Orange extra
1 % Indian Yellow G.

55



4 % Cyanole Green 6 G
1,5 % Orange extra
1 % Fast Yellow S.

56



0,8 % Cyanole Green B
1,2 % Orange extra
2,5 % Fast Yellow S.

57



1,1 % Cyanole Green B
2 % Orange extra
1 % Lanafuchsine S G.

Purple and Prune.

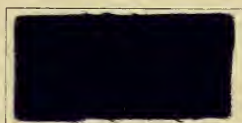
Suitable dyestuffs for these shades are: Azo Wool Violet 7R and 4B, Formyl Violet S4B, S5B, 6B—10B, the two first named being noted for dyeing very level; in fastness to alkalis the Formyl Violets are however superior. For shading towards blue, Cyanole may be

used; prune is obtained by shading with Lanafuchsine, Cyanole or Cyanole Green.



58

2% Azo Wool Violet 7 R.



59

2% Azo Wool Violet 4 B.



60

2% Formyl Violet S 4 B pat.

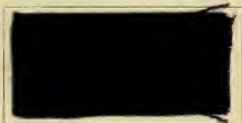


61

2% Formyl Violet 10 B pat.



62

1,5 % Azo Wool Violet 7 R.
0,75% Cyanole extra pat.
1,5 % Lanafuchsine S G.

63

2,5 % Azo Wool Violet 4 B
0,4% Cyanole Green B
0,1 % Lanafuchsine S G.

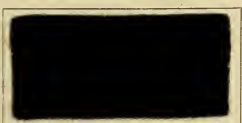
Black.

For dyeing black in strongly acid baths which effect the stripping of the ground colour and consequently cause an even distribution of the black dye over each single garment, the Naphtol Blacks B, 2 B, 3 B, 6 B, S G, and the Naphtylamine Blacks S, T, T J, are of primary importance; Naphtol Blue Black is used as a greenish-blue black.



64

7% Naphtol Black 3 B.



65

6% Naphtol Black S G.

66



6% Naphtylamine Black S pat.

67



6% Naphtylamine Black T J pat.

68



5% Naphtol Blue Black pat.

Very bright blacks are obtained with our new Azo Merino Blacks BE and 6BE.

69



6% Azo Merino Black BE pat.

70



6% Azo Merino Black 6BE pat.

These brands dye very level and have a good covering power. Naphtol Black B, 2B, 3B, 6B and Azo Merino Black yield bluish, the rest denser shades. According to the shade to be obtained, other dyes, such as Indian Yellow, Orange, Acid Green, Cyanole Green may be used in the same bath for producing any special shade of black. The Naphtylamine Blacks require somewhat less acid than the Naphtol Blacks and Naphtol Blue Black.

Directions for Dyeing in a Strongly Acid Bath.

The dyestuffs already referred to are one and all dyed with the addition of 10 to 20% Glauber's salt and 4 to 5% sulphuric acid or 10 to 15% bisulphate of soda. A still larger quantity of acid is not only superfluous, but may even frequently do harm by causing the dyestuff to dye too rapidly. This is a point to be considered when dyeing heavy goods which are not easily penetrated; it is then sometimes advisable and advantageous to use acetic acid in place of sulphuric acid, and to add

a little of the latter for clearing the bath completely, but not before it appears nearly exhausted; an increase of the quantity of Glauber's salt may in such case be also of advantage.

As a rule the goods are entered at or near 140 to 160°F., the dye-bath is slowly heated to the boil and boiled for one hour, after which the goods are rinsed in cold water. The dye-baths exhaust almost completely, and it is therefore unnecessary to keep them.

Alkaline Blue is dyed near 175 to 195°F. with the addition of either 1% soda crystals or 4 to 5% borax; after dyeing, the goods are rinsed, and raised in a hot bath containing some sulphuric acid.

Staining the Cotton.

As already explained, the wool only is dyed by working according to the above methods; cotton threads or linings are left undyed and generally become lighter in shade than they were originally. Silk stitches or trimmings are frequently stained, but as a rule they remain paler than the wool; reference to the simultaneous dyeing of wool and silk in one bath will be found further on.

For dyeing the cotton, the cumbrous sumac and iron liquor process was formerly employed to a considerable extent, as in many cases it was sufficient to make the cotton appear dark and covered, but whenever the cotton and wool had to be of uniform shade, topping with basic dyestuffs had to be resorted to.

This process is a rather troublesome one and therefore not much liked, especially so because, during the subsequent topping of the cotton, the wool absorbs a large quantity of dyestuffs and is consequently liable to smut.

With the introduction of our Diamine Colours an excellent opportunity presented itself to shorten this roundabout process and yet obtain much better results. The wool is dyed first in an acid bath as described above, the goods are then rinsed well and cotton-dyed in a cold or lukewarm bath. If carried out in an adequate manner, the process gives very good results and clean goods;

it is however advisable to keep the wool on the light side of the shade to be matched and to bring it to the proper shade whilst dyeing the cotton, this result being secured by slightly warming the dye-bath containing Diamine Colours.

The following Diamine Colours are specially suitable for cotton dyeing by reason of their not tinting the wool or only slightly so:

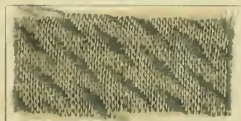
Diamine Fast Yellow A	Diamine Brown M pat.
Diamine Orange G, D	Diamine Nitrazol Brown B
Diamine Black BH, RMW pat.	pat.
Diamine Sky Blue pat.	Diamine Catechine B pat.
Diamine Rose BD pat.	Diamineral Blue R pat.

The following tint the wool slightly more, but still are useful.

Diamine Red 4B, 10B pat.	Diamine Heliotrope O, B, G
Cotton Red A	pat.
Diamine Brown S pat.	Oxy Diamine Violet B pat.
Diamine Blue 2B, 3B, BX,	Diamine Bordeaux B pat.
NC pat.	Diamine Fast Yellow B, FF
Diamine Green B, G pat.	pat.
Diamine Black HW pat.	Diamine Catechine 3G pat.
Diamine Brilliant Blue G pat.	

Wool dyed first with:

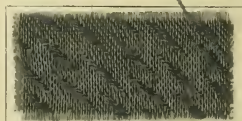
71



0,12 % Cyanole Green B
0,02 % Orange G G
0,05 % Azo Orseille B B.

Cotton topped per
10 gallons dye-liquor with:

71a



0,08 oz Diamine Black R M W pat.
0,029 „ Diamine Sky Blue pat.

72



0,4 % Cyanole Green B
1 % Tropaeoline 00
0,8 % Lanafuch sine S G.

72a



0,64 oz Diamine Brown M pat.
0,4 „ Diamine Black BH pat.
0,4 „ Diamine Orange D.

Wool dyed first with:

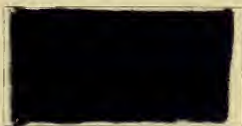
Cotton topped per
10 gallons dye-liquor with:

73



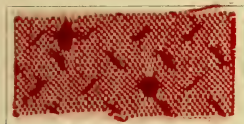
2,3 % Indigo Blue SGN pat.
0,2 % Formyl Violet S 4 B pat.
0,15% Orange extra.

73a



3,2 oz Diamine Black BH pat.
1,6 " Diamine Blue 2B pat.
0,16 " Diamine Bordeaux B pat.

74



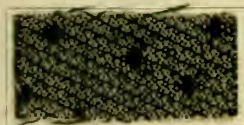
2% Azo Rubine A.

74a



2,4 oz Diamine Nitrazol Brown B pat.
0,8 " Diamine Red 4B.

75



1,5 % Cyanole Green B
1 % Fast Yellow S
0,3% Orange extra.

75a



0,48 oz Diamine Orange D
3,2 " Diamine Fast Yellow A
1,28 " Diamine Sky Blue pat.

76



4% Naphtylamine Black S pat.

76a



4,8 oz Diamine Black RMW pat.
2,4 " Diamine Black BH pat.

By suitable combination of the various dyestuffs, any desired shade may be obtained. Another series of shades on dress goods will be found in our pattern card No 2238, and on upholstery goods in pattern card No 2202.

Directions for Topping the Cotton.

The goods previously dyed in the acid bath must be well rinsed and are then dyed in a short and concentrated bath containing $\frac{1}{2}$ to 1 lb of Glauber's salt, $1\frac{1}{2}$ oz liquid ammonia per 10 gallons and the requisite dyestuffs, the temperature being 68 to 77° F. Having left the goods in this bath for $\frac{1}{4}$ to $\frac{1}{2}$ hour, they are lifted, hydroextracted or well drained, and rinsed in cold water, finally with the addition of some acetic acid.

The baths not being exhausted, it is advisable to keep them for dyeing future lots.

Cotton Dyeing as a First Operation.

Another very suitable process for covering the cotton, which has been successfully introduced, is, dyeing the cotton first, i. e. before the wool, the latter being then dyed in a second (acid) bath.

It is quite evident that for this purpose the cotton dyestuff must be fast to acids. There being but very few cotton dyestuffs answering this condition, the choice is limited to a few grey shades and blacks on cotton, which is however quite sufficient for most purposes.

To this end the goods are dyed in a bath of 100 to 125° F. with 2 to 3% Diamine Milling Black B conc. or FG extra in a minimum quantity of water containing 3 oz soda ash and 1 lb Glauber's salt per 10 gallons. After dyeing, the goods are hydroextracted or allowed to drain well, and rinsed in cold water.

Cotton is dyed from grey to black by this process without staining the wool to any extent, which can then be dyed in a fresh acid bath to any shade. This very simple way leads to quite excellent results for navy, dark green, brown and black shades.

It has to be borne in mind that the quantity of acid used for wool dyeing be not too small, and that the boiling be not unduly prolonged.

Cotton dyed as a first operation with
4% Diamine Milling Black F G extra pat.

77



Wool undyed.

78



Wool dyed subsequently with
2,75% Indigo Blue SGN pat.
0,25% Lanafuchsine 6B.

79



Wool dyed subsequently with
0,6% Cyanole Green B
1,5% Orange extra
1 % Lanafuchsine SG.

80



Wool dyed subsequently with
4% Naphtylamine Black S pat.

B) Dyeing in Weakly Acid Baths.

This method offers the advantage of not stripping the cotton threads and linings, which therefore do not require to be re-dyed; silk also is in most cases fairly well covered by this method.

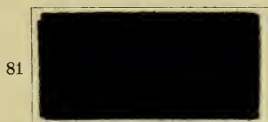
The process is chiefly applied for re-dyeing dark coloured wearing apparel which has not been previously stripped with soda ash, but only slightly cleaned, ready for re-dyeing.

For Navy Blue and Dark Blue

our Lanacyl Blue 2B and R are very suitable, which for reddish blues are shaded with Lanacyl Violet B; for very dark blues, Lanacyl Navy Blue and 3B are used.

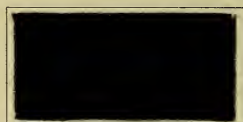
These dyestuffs may besides be shaded with Formyl Violet S4B, Formyl Blue B, Naphtol Blue Black and

Brilliant Milling Green B, which go on to the fibre under similar conditions; if the cotton is to be slightly tinted, small quantities of either Diamine Black BH or Diamine Dark Blue B should be added.



81

2,5% Lanacyl Blue 2B pat.



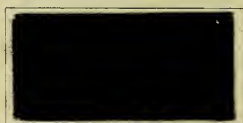
82

2,5% Lanacyl Blue R pat.



83

2,5% Lanacyl Violet B pat.



84

2,5% Lanacyl Navy Blue B pat.



85

2% Formyl Blue B pat.

For Dark Green and Olive.

For dark green, combinations of Diamine Green B or G with Brilliant Milling Green B, or Naphtol Blue Black and a little Indian Yellow G are useful. Olive can be obtained by adding a little more of either Indian Yellow and Orange extra, or Oxy Diamine Brown G, according to requirement.



86

3% Diamine Green B pat.



87

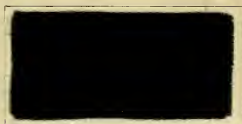
3% Diamine Green G pat.

88



2% Brilliant Milling Green B.

89

2,5% Diamine Green B pat.
1,5% Brilliant Milling Green B.

90

1,5% Diamine Green B pat.
0,5% Oxy Diamine Brown G
0,5% Indian Yellow G.For Brown.

Depending on the shade required, Diamine Brown M, Diamineral Brown G or Oxy Diamine Brown G are useful; these may be darkened with either Naphtol Blue Black or Lanacyl Blue 2B and shaded towards yellow with Indian Yellow G or R.

91



3% Diamineral Brown M pat.

92



3% Diamineral Brown G pat.

93



3% Oxy Diamine Brown G.

94

3 % Diamine Brown M pat.
0,6% Naphtol Blue Black pat.For Black.

which in garment dyeing also may be considered the most important dye, our various brands of Naphylamine Black are very largely used. Naphtylamine Black 4B

and 6B and Naphtyl Blue Black N may be especially recommended; colours suitable for shading are Formyl Blue B, Brilliant Milling Green B, Indian Yellow G and Orange.



5% Naphtylamine Black 4B pat.



4,5% Naphtyl Blue Black N pat.

Directions for Dyeing in Weakly Acid Baths.

The goods are dyed at the simmer with the addition of 10 to 20% Glauber's salt and 3 to 5% acetic acid; for black, the quantity of acetic acid may be increased to 10%. It is not necessary to exhaust the baths completely; they must however always react slightly acid. Care must be taken that the goods do not contain any alkali on entering the dye liquor.

C) Dyeing in Neutral Baths with Diamine Colours and Wool Dyestuffs.

Dyeing in neutral baths is chiefly applied to union goods containing considerable quantities of cotton which is required to be of exactly the same shade as the wool. All-wool goods may however be dyed with Diamine Colours if fastness to washing be required; in this case the products enumerated in column I are applied.

Diamine Colours are principally used on union goods either alone or in combination with such wool colours as dye well in a neutral bath.

We give in the following a list of the Diamine Colours and wool colours suitable for dyeing union goods, arranged according to their behaviour towards wool and cotton, and also a survey of those wool dyes which may be used for shading in neutral baths.

I. Diamine Colours which dye both wool and cotton alike or a nearly solid shade.	II. Dyestuffs which dye the cotton a deeper shade than the wool.	III. Dyestuffs which dye the wool in a neutral bath.
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Red, Pink and Claret.

Diamine Rose B D, G D pat. Diamine Brilliant Scarlet S Oxy Diamine Red S Diamine Red 4 B, 5 B, 6 B, 10 B, D pat. Diamine Fast Red F pat. Diamine Purpurine B, 3 B.	Diamine Bordeaux B, B R pat.	Irisamine G pat. Rosazeine 13 Azo Red A Croceine A Z Roccelline.
--	---------------------------------	--

Blue and Dark Blue.

Diamine Brilliant Blue G pat. Diamine Blue R W pat. Diamine New Blue G pat. Diamine Steel Blue L pat. Diamine Fast Blue C, C G pat. Union Blue F N pat. Diamine Dark Blue B pat. Oxy Diamine Blue R, G, 3 G, 5 G pat. Diaminogene B pat.	Diamine Sky Blue pat. Diamine Sky Blue F F pat. Diamine Blue 2 B, 3 B, B G, N C pat. Diamine New Blue R pat. Diamineral Blue R pat. Diamine Black B H pat.	Formyl Blue B pat. Naphthol Blue G, R pat. Lanacyl Blue R, 2 B pat. Lanacyl Navy Blue B, 2 B pat. Thiocarmine R powder pat. Alkaline Blue 3 R—6 B.
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Yellow and Orange.

Thioflavine S pat. Oxy Diamine Yellow G G Diamine Yellow C P Diamine Fast Yellow B, F F pat. Diamine Orange B.	Diamine Fast Yellow A Diamine Orange G, D.	Naphthaline Yellow Indian Yellow G, R Tropaeoline 00 Orange extra, E N Z.
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Green and Dark Green.

Diamine Green B, G pat.	Brilliant Milling Green B.
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Brown.

Diamine Brown M, R pat. Diamineral Brown G pat. Oxy Diamine Brown G Diamine Catechine 3 G, G pat. Union Brown T D pat.	Diamine Catechine B pat. Diamine Nitrazol Brown G pat.
--	--

I. Diamine Colours which dye both wool and cotton alike or a nearly solid shade.	II. Dyestuffs which dye the cotton a deeper shade than the wool.	III. Dyestuffs which dye the wool in a neutral bath.
---	--	--

Violet.

Diamine Heliotrope G, B, O pat.	Diamine Violet N pat. Oxy Diamine Violet B pat.	Formyl Violet S 4 B, 6 B, 10 B pat. Alkaline Violet CA pat.
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Black.

Union Black pat. Union Black S, P, BG pat. Oxy Diamine Black A, D, A M, FFC, JEI, JB, JW pat.	Oxy Diamine Black S 000 pat.	Naphtylamine Black D, 4 B, 6 B pat. Naphtol Blue Black pat.
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Diamine Colours which dye the wool deeper than the cotton: Diamine Scarlet B, 3B pat., and Cotton Brown N.

Directions for Dyeing in Neutral Baths.

The Diamine Colours are dyed either by themselves or in combination with the above named wool colours in a neutral bath containing 1 lb of Glauber's salt per 10 gallons liquor for pale, and 2 lbs for dark, shades. It should be observed that the previously cleaned goods retain no alkali (soda or ammonia) which may act detrimentally to the wool in the hot neutral bath.

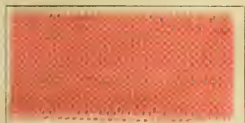
The goods are dyed near, or just at, the boil according to prevailing circumstances, the wool dyeing better at a high, and the cotton better at a lower, temperature; the cotton can thus be dyed in fuller shades. It is therefore advisable in the majority of cases to enter the goods lukewarm, raise the bath gradually to the boil and allow it to cool down towards the finish.

If the original colours of the goods, or the special behaviour of the Diamine Colours employed, necessitate a modification of the shade of the wool, this is effected with the above named wool dyes at a raised temperature.

If Alkaline Blue be used at the same time, some borax or soda ash should be added to the dye-bath and the goods raised with acids after dyeing; boiling must be avoided.

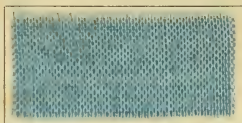
To illustrate standard shades of our whole range of Diamine Colours would too far exceed the compass of this book; we would therefore refer all interested parties to our special pattern card No 2140 and here confine ourselves to a few shades frequently asked for on union goods.

97



0,05% Diamine Rose GD pat.
0,05% Rosazeine 13.

98



0,1 % Diamine Sky Blue FF pat.
0,02% Alkaline Blue 6B.

99



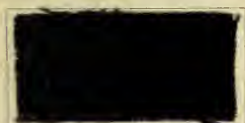
3 % Thioflavine S pat.
0,5% Naphtaline Yellow.

100



2 % Diamine Scarlet B pat.
0,5% Diamine Red 4B.

101



5% Union Blue FN pat.

102



2 % Diamine Catechine G pat.
0,2% Lanacyl Blue R pat.

103



0,2 % Diamine Dark Blue B pat.
0,05% Diamine Catechine B pat.
0,08% Formyl Blue B pat.

104



0,4 % Diamine Violet N pat.
0,6 % Oxy Diamine Blue G
0,35% Formyl Violet S+B pat.
topped with
0,3 % Methyl Violet B No 1.

105



2 % Oxy Diamine Yellow GG
0,5% Brilliant Milling Green B
topped with
0,5% Solid Green cryst extra.

106



4% Union Brown TD pat.

107



2,5 % Diamineral Blue R pat
0,5 % Naphtol Blue Black pat.
0,75% Formyl Violet S4B pat.

108



2,5 % Diamine Bordeaux B pat.
1 % Diamine Red 10B pat.
0,5 % Diamine Brown M pat.
0,15% Formyl Violet S4B pat.

109



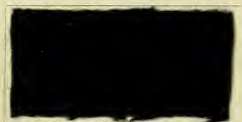
2,5 % Diamine Brown M pat
1 % Diamine Brown R
0,7 % Oxy Diamine Black JE1 pat.
1 % Diamine Fast Yellow B
0,15% Naphtol Blue Black pat.

110



3 % Diamine Fast Yellow B
1 % Diamine Brown 3G pat.
2 % Diamine Black HW pat.
1 % Indian Yellow G
0,25% Naphtol Blue Black pat.

111



3,2% Diamine Green B pat.
1,8% Diamine Black BH pat.
0,5 % Diamine Fast Yellow B
1 % Brilliant Milling Green B
0,4 % Naphtol Blue Black pat.

112



3 % Diamine Bordeaux BR pat.
0,15% Formyl Violet S4B pat.
0,5 % Diamine Catechine G pat

113*



4,5% Oxy Diamine Black JW pat.
0,5 % Formyl Violet S4B pat.
1,5% Diamine Green B pat.
1 % Naphtylamine Black X2B pat.

114*



5,5% Union Black S pat.
0,5% Diamine Green B pat.

* By adding some Diamine Green in dyeing blacks, very full shades can be produced and multi-coloured goods are well covered and turned out uniform in shade. The choice of the black Diamine Colour is quite immaterial; if the wool remains too light, the bath should be boiled up again, or a further addition of Naphtylamine Black should be made.

If at all practicable, all neutral-dyed goods should be cooled well in the open air before rinsing them in cold water. If taken straight from the hot dye-bath into cold

water, it may happen that the rinsing water will become too warm and cause the cotton to be stripped.

In any case it is advisable to add some acetic acid to the last rinsing water in order to give the goods a firm handle; some acetic acid may also be added to the finish.

If in certain cases the goods dyed with Diamine Colours only should not be found bright enough, they may be topped in a fresh bath, either hot or cold, with basic dyestuffs with the addition of some acetic acid. It should be pointed out that in such case the wool ought not to be dyed too heavy or too bright a shade in the Diamine Colour bath, as it always takes up some more dye during the topping process, depending on the temperature at which this is carried out.

D) Dyeing with Basic Dyestuffs.

In consequence of their inadequate fastness to light, the basic dyestuffs are only used on wool for dyeing very bright shades of crimson, violet, green and yellow. Although they are chiefly dyed in neutral baths, they behave quite differently to the above named Diamine Colours, and the two classes should on no account be dyed together in one bath. As pointed out before, they are frequently also applied on unions for brightening dyeings produced with Diamine Colours, in which case they are dyed in a fresh bath with addition of some acetic acid.

Dyestuffs chiefly used for wool are the following:

For Pink, Crimson and Dark Red.

Magenta, Cerise, Russian Red, Geranium, Aniline Brown.

For Yellow, Orange and Brown.

Thioflavine T pat., Chrysoïdine, Bismarck Brown.

For Green.

Brilliant Green and Solid Green, shaded if required with Thioflavine T pat.

For Violet.

All the brands of Methyl Violet from R to 6B.

115



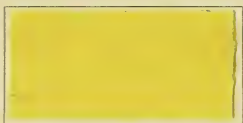
1% Magenta Ia. diam. large cryst.

116



1% Methyl Violet 2B No 1.

117



1% Thioflavine T pat.

118



1% Brilliant Green cryst. extra.

Directions for Dyeing Basic Dyestuffs.

Magenta, Cerise, Russian Red, Geranium, Aniline Brown are dyed with 10% Glauber's salt; the goods are entered warm, the liquor is brought to the boil and finally allowed to cool down as far as possible.

Chrysoïdine and Bismarck Brown are dyed similarly, but with the addition of 10% Glauber's salt and 5% alum.

Thioflavine T is best dyed with 10% Glauber's salt and 5% acetic acid or 10% bisulphite of soda.

Brilliant Green and Solid Green are dyed either with 10% Glauber's salt and 5% acetic acid, or on a mordant of 15% sodium hyposulphite and 5% acetic acid. This mordant is best prepared in a wooden vessel and applied for one hour at 160 to 175° F., after which the goods are well rinsed and dyed.

When working according to this method, the cotton is left undyed. Particulars regarding the dyeing of cotton in unions by means of basic dyestuffs are to be found on pages 59 and 60 treating on the dyeing of cotton.

II. The Dyeing of Silk.

Silk garments are most frequently sent for re-dyeing with the stitches removed and only rarely in their whole state, unless they be made of very soft material such as foulard or crêpe; high class and heavier qualities are usually unstitched before re-dyeing.

In view of the comparatively high value of the material, it must be treated most carefully during the dyeing process in order to save it from crimps and chafes which would render it useless; the so-called "dyeing à ressort", in which the goods are dyed whilst being stretched on a frame, is therefore to be recommended.

For the dyeing of pure silk goods, acid dyestuffs are chiefly used, basic dyestuffs being only occasionally employed; goods which are difficult to penetrate and required to be fast to washing and water, may also be advantageously dyed with Diamine Colours.

Preparation for Dyeing.

The goods to be dyed are generally cleaned and stripped with very weakly alkaline hot water containing soda carbonate or ammonia, or with strong, boiling soap liquors containing from 1—2 lbs soap per 10 gallons.

Soap as such does not injure the silk; frequently, however, silk weighted immoderately has to be dyed, which tenders during the treatment; the testing as to strength of a small portion of the goods to be dyed cannot therefore be too strongly recommended. This is generally done by folding a small cutting of the dry material in

the direction of both the warp and the weft, pressing the crease hard with the finger nail or a flat iron, and trying its strength by stretching and pulling; if it breaks in the creases, very great caution must be exercised in dyeing. The test is still more thorough if the material be previously boiled for some time in a soap solution.

Damages due to wear and exposure of silken material may be remedied comparatively easily by stripping the ground colour, and the subsequent re-dyeing covers any defects; less attention need therefore be paid with silk than with wool to the selection of levelling dyestuffs, and nearly any colouring matter can be employed on silk, although a preference is generally given to dyeing in acid baths.

A) Dyeing in Acid Baths.

Specially suitable dyestuffs for

Pink, Red and Claret.

For bright pinks the various Eosines, viz: Eosine GGF, 3G, Erythrosine B, D, Phloxine, Rose Bengale, besides which Rosazeine B and 13 and Irisamine G can be recommended.



119

0,5% Eosine GGF.



120

0,5% Rose Bengale extra N.

For bright scarlets the preference lies chiefly with the Brilliant Croceïnes R, B, 2B, M, 3B, 5B, 7B, 9B and Croceïne AZ; Brilliant Cochineal 2R and 4R,

Scarlet EC, Brilliant Scarlet 4R and Crystal Scarlet 6R are also used.

121



5% Brilliant Croceïne 5B.

122



5% Croceïne AZ.

For deeper, bluish reds: Roccelline, Azo Rubine A, Azo Red A, Azo Orseille 2B, Brilliant Orseille C, Amaranth B, Naphtol Red C, EB, Bordeaux BL, Lanafuchsine SB, SG.

123



5% Roccelline.

124



6% Azo Rubine A.

125



7% Amaranth B.

126



7% Bordeaux BL.

For claret shades the four last named red dye-stuffs can be used along with some blue etc. for shading or darkening, for which purpose the various brands of Cyanole, Formyl Violet or Cyanole Green will be found serviceable.

127

4,5% Roccelline
1 % Formyl Violet S+B pat.

128

7 % Bordeaux BL
0,5% Cyanole extra pat.
1 % Orange extra.

Pale Blue, Blue, Peacock, Navy and Dark Blue.

For pale blue and blue the following brands are useful: Cyanole extra, FF, 2B, the various brands of Soluble Blues viz: Blue FS, BS, RS, Formyl Blue B, Indigo Blue N, SGN, and further the Alkaline Blues.

129



0,3% Cyanole extra pat.

130



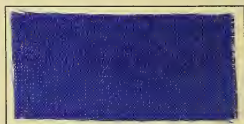
0,2% Alkaline Blue 3 B.

131



1,5% Blue FS.

132



6% Indigo Blue SGN pat.

133



3,5% Formyl Blue B pat.

For peacock, navy and dark blue the same dyestuffs may be used if suitably shaded or darkened with Cyanole Green, Acid Green, Naphtol Blue Black, Naphtol Black, Naphtylamine Black 4B, 6B, according to requirements; very fine and bright navies can besides be obtained with Solid Blue R and 3R. For peacock, navy and dark blue, Alkaline Blues are most generally used for bottoming in a separate bath, and shaded with Alkali Violet if intended for dark blue.

134



5% Solid Blue R.

135



5% Solid Blue 3R.

136



3% Formyl Blue B pat.
2% Naphtol Blue Black pat.

137



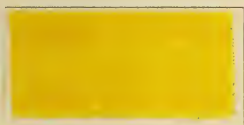
6% Indigo Blue SGN pat.
3% Solid Blue R.

For flattening very deep shades of blue, Indian Yellow, Orange, or one of the afore mentioned reds can be used.

Yellow and Orange.

Very pure yellows may be obtained with Naphtol Yellow S or Acid Yellow AT, richer but redder shades with Indian Yellow G, R, Tropaeoline G and 00. For pure orange shades the Orange extra, R and GG brands and also Croceine Orange EN are employed.

138



3% Acid Yellow AT.

139



3% Indian Yellow G.

140



3% Tropaeoline 00.

141



4% Orange extra.

The yellow and orange dyestuffs are also extensively used for shading modes, olives, greens and browns.

Green, Dark Green and Olive.

Very bright greens can be produced with Acid Green extra conc. B and 5G, shaded with yellow if required.

142



5% Acid Green extra conc.

143

1% Acid Green extra conc.
2% Acid Yellow AT.

For dark greens, useful dyestuffs besides the Acid Greens are: Fast Acid Green B, BN, Cyanole Green B, 6G, S, shaded with Solid Blue R or Naphtol Blue Black and Indian Yellow G or Acid Yellow AT.

144



5% Fast Acid Green BN pat.

145



5% Cyanole Green 6G.

146

3% Acid Green extra conc.
3% Solid Blue R
1% Indian Yellow G.

147

4% Acid Green extra conc.
2% Tropaeoline 00
4% Orange extra.

148

2,5% Cyanole Green B
1 % Indian Yellow G
2 % Acid Brown D.

Olive shades are produced in a similar way and shaded with Orange extra or some red dyestuffs.

Grey, Mode and Brown.

For greys, the various brands of Induline, Nigrosine and Aniline Grey are applicable, which may be

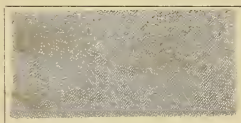
shaded as desired with Orange, Indian Yellow or Lanafuchsine.

149



0,5% Aniline Grey R.

150



0,25% Nigrosine.

For mode shades, Cyanole or Cyanole Green, combined with the above named yellow and red dyes, may be used in place of Induline or Nigrosine.

151



0,3 % Cyanole Green B
0,15% Orange extra
0,1 % Lanafuchsine SG.

152



0,4 % Cyanole Green B
0,2 % Orange extra
0,15% Lanafuchsine SG.

153



0,2% Cyanole extra pat.
0,6% Orange GG
0,2% Lanafuchsine SG.

154



0,6% Cyanole extra pat.
0,3% Orange extra
0,2% Lanafuchsine SG.

Pale shades of brown can be obtained in the same manner as mode shades, or with addition of Acid Brown D; for deeper shades the Cyanole can be replaced by Solid Blue R or Naphtol Blue Black.

155



5% Acid Brown D.

156



4 % Acid Brown D
2 % Roccelline
0,4% Cyanole extra pat.

157



5 % Acid Brown D
1,2% Roccelline
1 % Cyanole extra pat.

158



5% Acid Brown D
2% Solid Blue R.

Purple and Prune.

For pale and bright violet shades, either the Formyl Violet brands or else Alkali Violet C are used; dark shades and also prunes are dyed with the same colours and saddened with Solid Blue R or Cyanole, Cyanole Green and Azo Red, Roccelline or Lanafuchsine.

159



3% Formyl Violet S4B pat.

160



2,5% Formyl Violet S4B pat.
2 % Roccelline.

Black.

For blacks, the Naphtylamine Blacks 4B and 6B are specially well suited, besides which, Naphtylamine Black D, R, 4B, 6B, or Naphtyl Blue Black N shaded with Acid Green may also be used; the saddening is done with Indian Yellow or Orange.

161



10% Naphtylamine Black 4B pat.

162



10% Naphtylamine Black R pat.
1 % Indian Yellow G.

Directions for Dyeing in Acid Baths.

The afore named acid dyestuffs are all dyed at a temperature of 160 to 175° F. in a bath slightly acidulated with sulphuric acid; exceptions are the Eosines and

Naphtylamine Blacks, which must be dyed with acetic acid. It cannot be too strongly emphasized that in silk dyeing too great an excess of acid must be avoided, as it may easily cause uneven dyeings in the first instance, and secondly prevent a good penetration, which is for most goods a necessity; the baths must have only a weakly acid reaction. Boiled-off liquors killed with acid render quite excellent service; such soap liquors have a similar mission in silk-dyeing as Glauber's salt in wool-dyeing; they neutralize acids and act very favourably upon the quality of the goods by reason of the fat and silk gum they contain; they should therefore be used wherever obtainable. If boiled-off liquors are not available, substitutes will serve equally as well and may be prepared according to the following directions: 2 lbs soap, 6 oz glue or gelatine, $1\frac{1}{2}$ oz olive oil and 3 oz common salt are well boiled in 10 gallons of water. The solution is applied just like ordinary boiled-off liquor; the killing with such acids as acetic or sulphuric acid must take place very gradually and under constant stirring.

Alkaline Blue is dyed at the boil with the addition of 10% soda ash and 5% soap, rinsing first and afterwards raising in a fresh bath with sulphuric acid. "

B) Dyeing with Diamine Colours.

Quite a number of Diamine Colours are also well applicable to silk and are chiefly used for producing dyeings fast to water and washing; they are dyed in a neutral bath of boiled-off liquor or in a bath killed with acetic acid; an excess of acid must be strictly avoided. When dyeing goods which are not easily penetrated, it is best to dye without acid until good penetration has been effected; only then a little acid may be added.

The following Diamine Colours are suitable:

Diamine Rose GD, BD pat.	Diamine Green B, G pat.
Diamine Scarlet B, 3B pat.	Diamine Black HW, BH pat.
Diamine Fast Red F pat.	Diamine Dark Blue B pat.
Diamine Bordeaux S pat.	Diamine Fast Yellow B, FF pat.
Diamine Violet N pat.	Diamine Yellow CP
Diamine Brown 3G, M pat.	Diamine Gold pat.

Below are a few dyeings on silk of some of the most important Diamine Colours:



163

3% Diamine Yellow CP.



164

4% Diamine Scarlet 3B pat.



165

4% Diamine Violet N pat.



166

3% Diamine Brown 3G pat.



167

4% Diamine Dark Blue B pat.



168

4% Diamine Green B pat.

C) Dyeing with Basic Dyestuffs.

In some cases, and for specially bright or brilliant shades, basic dyestuffs also are applied on silk.

The following amongst others are particularly well suited:

Magenta	Brilliant Green
Safranine	Solid Green
Methyl Violet	Thioflavine T.

169



0,2% Safranine S No 150.

170



2% Magenta Ia. large cryst.

171



2% Brilliant Green cryst. extra.

172



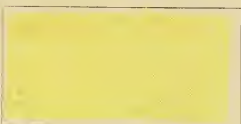
1% Methyl Violet R No I.

173



0,5% Irisamine G.

174



3% Thioflavine T pat.

For very pale shades these dyestuffs are applied in a hot soap bath with a good lather; medium and dark shades are dyed in a boiled-off liquor acidulated with acetic acid. An excess of acetic acid rather facilitates a good penetration.

The above directions apply to the dyeing of pure silk goods only; if in one case or another silk and cotton mixed goods are to be dyed according to this method, the cotton will have to be dyed subsequently in another bath. Directions for this process are given on pages 59—60.

III. The Dyeing of Satin.

(Silk and Cotton.)

For dyeing goods composed of silk and cotton, the one-bath process, as the method most extensively used with Diamine Colours, deserves to be mentioned, which is much simpler than the old and complicated methods of dyeing this material. The preparation of the silk warp goods is the same as for pure silk; the best for the purpose is boiling off with soap.

Generally speaking, the same colouring matters as for union goods are used for dyeing silk warps (see pages 23—24), but the shading with wool dyes in the same bath is omitted. Instead of this they are shaded in a fresh bath with acid or basic dyestuffs if the desired tone has not already been obtained with Diamine Colours, and either the silk or the cotton, or both together may be brought to shade simultaneously, or one after the other.

Directions for Dyeing Satin with Diamine Colours.

The dyeing is done for one hour in a boiling bath containing about 3 to 5 oz soap, $\frac{3}{4}$ oz soda ash or borax, $\frac{1}{2}$ to 1 lb Glauber's salt per 10 gallons. Boiling or raising the temperature, as the case may be, causes the silk to be dyed a darker shade, whilst a lower temperature renders the cotton darker; it is in any case of advantage to keep the cotton a little darker than the silk, as the latter deepens in shade in the subsequent topping bath. An increase of Glauber's salt above the stated quantity has also the effect of dyeing the cotton deeper.

Directions for Topping Silk Warp dyed with Diamine Colours.

For topping goods dyed as above, both acid and basic dyestuffs are used. The former are used for shading the silk only, the latter dye both silk and wool; the dyes of both groups are applied in a bath acidulated with 10 to 15% acetic acid and can be used simultaneously in one and the same bath according to requirements. The topping is done either cold or lukewarm; by raising the temperature the silk is tinted to a greater extent.

The acetic acid slightly dulls the shade of some Diamine Colours such as Diamine Red 4B, 5B, 10B, Diamine Bordeaux B, Diamine Brown R, V, which however disappears on subsequent thorough rinsing.

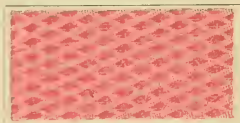
Below we give some patterns of the ordinary standard shades on silk warps and refer for details of dyeing silk warps to our pamphlet, "The Diamine Colours on Half-Silk".

175



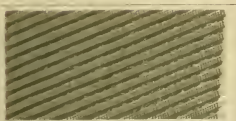
0,2 % Diamine Sky Blue pat.
0,04% Alkaline Blue 6B.

176



0,1% Diamine Rose GD pat.
topped with
Irisamine G pat.

177



0,3% Diamine Fast Yellow B pat.
0,4% Diamine Catechine B pat.
0,1% Diamine Black HW pat.

178



0,8% Diamine Brown 3 G pat.
1,5% Diamine Fast Yellow A
2 % Diamine Black HW pat.
topped with
Brilliant Green cryst. extra.
Chrysoidine cryst.
Cyanole extra pat.

179



2,5 % Diamine Blue BX pat.
 1 % Union Black S pat.
 0,25% Alkaline Blue 3B
 topped with
 New Methylene Blue N pat.
 Indigo Blue N pat.

180



2 % Diamine Orange G
 0,1% Diamine Brown B pat.
 topped with
 New Phosphine G pat.

181



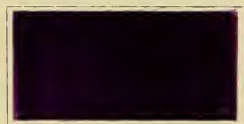
0,25% Diamine Grey G pat.
 0,05% Diamine Brown M pat.
 topped with
 Aniline Grey B.

182



3 % Diamine Scarlet B pat.
 0,5% Diamine Orange D.

183



0,6% Diamine Violet N pat.
 0,3% Diamine Brilliant Blue G pat.
 topped with
 Methyl Violet B No 1.

184



2,5% Diamine Brown M pat.
 1,5% Diamine Fast Yellow B pat.
 1,2% Oxy Diamine Black JE pat.
 topped with
 Bismarek Brown FF
 Safranine S No 150.

185



3,5% Diamine Bordeaux B pat.
 0,5% Diamine Orange D
 0,5% Diamine Brown M pat.
 topped with
 Magenta Ia. large cryst.

186



3 % Diamine Green B pat.
 1,6% Oxy Diamine Black S000 pat.
 0,5% Diamine Fast Yellow A
 topped with
 Brilliant Green cryst. extra
 Cyanole extra pat.

187



3 % Diamine Steel Blue L pat.
 2 % Diamine Black BH pat.
 0,1% Alkaline Blue 3B
 topped with
 Indigo Blue N pat.
 Methyl Indone B pat.

188



2 % Diamine Orange D
 1,5% Diamine Brown 3G pat.
 topped with
 Bismarek Brown FF
 Safranine S 150.

On iron mordant:

189



7 % Union Black S pat.
 1 % Diamine Green B pat.
 0,5% Diamine Fast Yellow B pat.
 topped with
 3 % Naphtylamine Black 4B pat.

190*



4 % Oxy Diamine Black S000 pat.
 0,5% Diamine Fast Yellow A
 6 % Extract of logwood.

*If for certain reasons the application of iron-logwood-black be desired on satin goods, the following recipe may be recommended as yielding good results:

The goods are mordanted with nitrate of iron of 32° Tw., well rinsed, bottomed in a hot bath with 3% fustic extract, and dyed at about 175° F. in a fresh bath with

4—5 % Oxy Diamine Black S000 pat.	} with addition of 1/2 lb soap and 1 lb Glauber's salt per 10 gallons liquor.
1/2 % Diamine Fast Yellow A	
4—8 % logwood extract	

IV. The Dyeing of Fabrics composed of Wool and Silk.

The silk interwoven in these fabrics necessitates special care in the dyeing so that it is not injured by pressure or friction. The dyeing may be done in either acid or neutral baths, the selection depending upon the ground colour and the condition of the fabric to be dyed. The cleaning of the goods is best done in a moderately hot soap liquor.

A) Dyeing in Acid Baths.

Wool having altogether a greater affinity for acid dyestuffs than silk, a narrower selection must be made amongst the wool dyestuffs given on pages 5—14. only those being useful which show a tendency to dye both fibres as uniform as possible and at the same time satisfy with regard to dyeing level. The following dyestuffs we can recommend from experience as dyeing both wool and silk to the same shade or nearly so, and also easily level.

For Red:

Rosazeïne 13, Brilliant Orseille C pat., Acid Magenta, Erythrosine B. Brilliant Croceïne M00, Croceïne A Z.

For Blue:

Indigo Blue N pat., Solid Blue R. Cyanole extra. FF pat. and Thiocarminc R powder pat.

For Yellow and Orange:

Indian Yellow G, R. Orange extra, Tropaeoline 00.

For Green:

Cyanole Green B, 6G, Acid Green extra conc.,
Fast Acid Green BN.

For Violet:

Acid Violet 6BC, Formyl Violet S4B, 6B pat.

For Black:

Naphtylamine Black 4B, 6B pat., Gloria Black B.

By combinations of suitable dyestuffs any shade can be produced without the least difficulty.

Directions for Dyeing in Acid Baths.

According to the depth of shade to be dyed, the dye-bath is charged with 5—15% bisulphate of soda, 5—15% Glauber's salt and the dyestuff required; the goods are entered at 140° F., the bath brought slowly to the boil, which should not however be continued beyond 1/2 hour; after this time the bath is allowed to cool down to 120° F., the goods are then treated for another 1/2 hour or so, lifted, rinsed, and dried. Prolonged boiling would render the wool too heavy in shade: in a hot or slowly cooling bath the silk becomes better covered.

Very excellent results may also be obtained by adding only one half of the required quantity of colouring matter at the beginning, entering the goods and boiling for 1/2 hour; after having lifted the fabrics, the second half of the dye is added, and the bath cooled off to some extent; the goods are then re-entered and worked for another 1/2 or 3/4 hour without any further heating. This method yields specially good results with dark shades and blacks.

Erythrosine, Rosazeïne 13, Naphtylamine Black 4B and 6B and Gloria Black B, are dyed with 5—10% acetic acid and 10% Glauber's salt, instead of with bisulphate of soda and Glauber's salt.

An additional help to give the silk sufficient body (also in the case of prolonged boiling) is the use of basic dyestuffs in an acid bath; even small quantities are effective in helping to cover the silk satisfactorily.

Particularly suitable are the following basic dyestuffs:

Magenta	Solid Green
Tannin Heliotrope	Thioflavine T pat.
Safranine	Tannin Orange R pat.
New Methylene Blue pat.	Bismarck Brown.
	Indazine M pat.

These dyestuffs should only be applied in small quantities and best towards the finish, otherwise the goods are apt to rub off; they may however also be used for topping the silk in a fresh lukewarm bath acidulated with acetic acid, provided the wool has not already been dyed too deep, as it will still take up part of the dyestuff.

B) Dyeing in Neutral Baths with Diamine Colours.

This method is chiefly intended for closely woven fabrics which are hard to penetrate, for which those Diamine Colours are principally used which dye both wool and silk as uniform as possible.

These dyestuffs are:

Diamine Rose BD, G D pat.	Diamine Fast Yellow B pat.
Diamine Scarlet B, 3 B pat.	Diamine Gold pat.
Diamine Bordeaux S pat.	Diamine Yellow CP

Thioflavine S pat.	Diamine Green G, B pat.
Diamine Brown M, B, 3 G pat.	Diamine Dark Blue B pat.
Oxy Diamine Brown G	Diamine Steel Blue L pat.
Diamineral Brown G pat.	Diamine Black HW pat.
Diamine Blue 3R, RW pat.	Union Black S pat.
Diamine Brilliant Blue G pat.	Diaminogene extra pat.
Diamine Sky Blue FF pat.	

Directions for Dyeing Diamine Colours in Neutral Baths.

The bath is charged with 1 to 2 lbs Glauber's salt per 10 gallons, and, after the goods have been entered at 140° F., brought to the boil, and kept gently boiling for $\frac{1}{2}$ to $\frac{3}{4}$ hour. If the boiling be too severe it causes the wool to get too dark, whilst silk dyes easier in a cooling bath; if the wool does not dye sufficiently well, some acetic acid (1—2%) must be added. This addition is also to be recommended for dyeing Diamine Sky Blue, Diamine Brilliant Blue and Diamine Blue 3R; Union Black S is best dyed with an addition of 1—2% borax (apart from the prescribed quantity of Glauber's salt).

It will only in very rare instances be necessary to top the silk; in the case of black this is best achieved with Naphtylamine Black 4B in a fresh lukewarm bath acidulated with acetic acid.

Sometimes (chiefly in the case of pale shades), goods composed of wool and silk may also be dyed in alkaline baths, the additions being soap and phosphate of soda or borax, say 3—4 oz each per 10 gallons of dye-liquor.

The following dyestuffs are adapted for this purpose:

Alkaline Blue	Indian Yellow G, R
Alkaline Violet C pat.	Rosazeïne 13
Formyl Violet S4B pat.	

After dyeing, the goods are rinsed and raised in an acid bath.

Below we give several patterns on goods composed of wool and silk, and dyed according to directions given above. Further details on the dyeing of fabrics composed of wool and silk will be found in our pamphlet No 1989 which is at the disposal of customers.

191



0.05 % Rosazeine 13
0.01 % Erythrosine B.

192



2.5 % Cyanole extra pat.
0.15 % Indian Yellow G.

193



0.6 % Diamine Green B pat.
1.2 % Diamine Fast Yellow FF pat.

194



0.6 % Diamine Brown 3G pat.
0.15 % Diamine Brown M pat.
0.2 % Diamine Gold pat

195



4 % Brilliant Croceine M 00.

196



0.5 % Diamine Steel Blue L pat.
0.12 % Diamine Rose BD pat.

197



2.5 % Solid Blue R
0.2 % Acid Green extra conc.
0.1 % Orange GG.

198



1 % Cyanole extra pat.
0.8 % Indian Yellow R
0.3 % Orange extra
0.25 % Bismarck Brown GG
0.15 % Indazine M pat.

199



2 % Brilliant Croceine M 0
0,8 % Cyanole extra pat.
0,2 % Indian Yellow R
0,1 % Bismarck Brown G G
0,05 % Indazine M pat.

200



0,7 % Acid Magenta
0,3 % Cyanole extra pat.
0,6 % Tannin Heliotrope.

201



3 % Fast Acid Green B N pat.
3 % Cyanole extra pat.
0,5 % Indian Yellow G
0,5 % Indazine M pat.
0,2 % Thiofavin T pat.

202



1,5 % Croceine A Z
2 % Indian Yellow R
1 % Cyanole extra pat.

203



1,5 % Diamine Bordeaux S pat.
1 % Diamine Brown M pat.

204



0,15 % Cyanole extra pat.
0,2 % Orange extra
0,4 % Indian Yellow R
0,2 % Bismarck Brown G G.

205



8 % Glama Black B pat.
1 % Indian Yellow R.

206



5 % Naphtylamine Black 4 B pat.
0,15 % Acid Green extra conc.
0,4 % Indian Yellow R.

V. The Dyeing of Cotton.

For the dyeing of cotton the Diamine Colours are of first importance, as nearly any shade can be produced therewith; for some purposes, where brightness is essential, the shades produced with Diamine Colours must be topped with basic dyestuffs, which however in this case dye without any previous mordanting.

Only in such cases should basic dyestuffs with a tannin-antimony mordant be resorted to where a specially brilliant shade is to be dyed and cannot be obtained with Diamine Colours alone or even with a basic topping.

Preparation for Dyeing.

The best way of freeing cotton from impurities is boiling in a weak alkaline bath; very stiffly starched goods must be treated in a lukewarm infusion of malt; strongly faded goods must be bleached or stripped with bleaching powder, and soured off.

A) Dyeing with Diamine Colours.

Any of the Diamine Colours can be used for dyeing cotton goods, but only the best suited are enumerated below.

Pink, Red, Claret.

For pink, Diamine Rose BD, BG, GD; for red, Diamine Scarlet B, 3B, Diamine Red 4B, 5B, 6B, 10B,

Diamine Purpurine B, 3B, 6B, Diamine Brilliant Scarlet S, Diamine Fast Red F; for claret, Diamine Bordeaux B, S, or the red brands of Diamine Colours darkened with Oxy Diamine Violet or Diamine Black BH.

In order to increase their brightness, red and claret shades can be topped with basic dyestuffs; for this purpose, the various brands of Safranine and Magenta are chiefly suitable.

207		208	
	0,15 % Diamine Rose BD pat.		0,07 % Diamine Rose GD pat. 0,06 % Diamine Orange G.
209		210	
	2,5 % Diamine Brilliant Scarlet S.		2,5 % Diamine Red 4B.
211		212	
	3 % Diamine Red 10B pat.		3 % Diamine Fast Red F pat.
213		214	
	3,5 % Diamine Bordeaux B pat. topped with 0,3 % Safranine S No 150.		3,5 % Diamine Bordeaux B pat. 1 % Oxy Diamine Violet B pat.

Pale Blue, Blue, Navy.

For pale blue, Diamine Sky Blue and Diamine Sky Blue FF; for richer blues, Diamine Blue 3B, 2B, BX, 3R, BG, RW, Diamine Brilliant Blue G, Oxy Diamine Blue R, G, 3G, 5G, Diamine Fast Blue C, CG, FFB are used.

Dark, greenish blues are obtainable with Diamine Steel Blue L; navies are advantageously produced by darkening the last named blues with Diamine Black BH, Diamine Dark Blue B or Oxy Diamine Black, or direct with Diamineral Blue R or Diamine Deep Blue R; specially bright shades can be dyed by topping with New Methylene Blue.

Blues very fast to washing (replacing Indigo) are obtained with Diaminogene Blue 2B or NA shaded according to desire with Diamine Azo Blue 2R or Diamine Black BH, and diazotised and developed with Beta Naphtol.

215



0,15 % Diamine Sky Blue FF pat.

216

2 % Diamine Sky Blue FF pat.
topped with
0,4 % New Methylene Blue N pat.

217



2,5 % Diamine Blue 2B pat.

218



2,5 % Diamine Brilliant Blue G pat.

219



2,5 % Oxy Diamine Blue R pat.

220



1 % Diamine Fast Blue CG pat.

221



3 % Diamine Steel Blue L pat.

222



3 % Diamineral Blue R pat.

223

3 % Diamineral Blue R pat.
topped with
0,5 % New Methylene Blue N pat.

224



4 % Diamine Deep Blue R pat.

225



3,5 % Diamineral Blue R pat.
0,6 % Diamine Black BH pat.

226



3 % Diaminogene Blue 2B pat.
diazotised and developed with
Beta Naphtol.

Yellow, Cream and Orange.

For greenish yellows, Thioflavine S and Oxy Diamine Yellow GG are useful; for deeper shades, Diamine Fast Yellow A, B, FF, Diamine Orange G, D, F, Oxy Diamine Orange G, R, for cream, according to the shade desired, Diamine Fast Yellow B, FF, Diamine Yellow CP and Diamine Orange G or D are chiefly applied, and are much in demand for curtains.

227



2 % Thioflavine S pat.

228



2 % Diamine Yellow CP.

229



2 % Diamine Fast Yellow A.

230



2 % Diamine Fast Yellow B pat.

231



2 % Diamine Orange G.

232



2 % Diamine Orange F.

Green, Dark Green and Olive.

Pales shades of green are obtained with Diamine Sky Blue FF shaded with Thioflavine S or Diamine Fast Yellow FF; in order to increase their brightness, they may be topped with either Brilliant Green or Solid Green; for dark shades of green, Diamine Green B, G, Diamine Dark Green N are useful.

Olive shades can be obtained with Diamine Green, Diamine Dark Blue B, or Diamine Black HW shaded with Diamine Brown 3G, Diamine Catechine G or Diamine Fast Yellow B.

233



2,5 % Thioflavine S pat.
0,25 % Diamine Sky Blue FF pat.

234



3 % Thioflavine S pat.
0,1 % Diamine Sky Blue FF pat.
topped with
0,35 % Brilliant Green cryst. extra

235



3 % Diamine Green B pat.

236



2 % Diamine Green G pat.
2 % Diamine Fast Yellow B pat.
0,75 % Diamine Brown 3G pat.

237



1,5 % Diamine Black HW pat.
2,5 % Diamine Fast Yellow B pat.
1,5 % Diamine Catechine G pat.

Greys and Mode Shades.

These are best obtained by combining Diamine Dark Blue B, Diaminogene extra or Diamine Fast Blue C with Diamine Catechine B or Diamine Brown 3G, also Diamine Fast Yellow B and Diamine Drange D.

238



0,1 % Diaminogene extra pat.
0,15 % Diamine Catechine B pat.

239



0,1 % Diamine Fast Blue C pat.
0,075 % Diamine Catechine B pat.
0,04 % Diamine Fast Yellow B pat.

240



0,4 % Diamine Dark Blue B pat.
 0,4 % Diamine Catechine B pat.
 0,15 % Diamine Fast Yellow B pat.

241



0,6 % Diamine Fast Yellow B pat.
 0,3 % Diamine Catechine B pat.

242



0,6 % Diamine Fast Yellow B pat.
 1,25 % Diamine Orange G
 0,1 % Diamine Fast Blue C pat.

243



0,4 % Diamine Fast Yellow B pat.
 0,5 % Diamine Catechine B pat.
 0,05 % Diamine Dark Blue B pat.

Brown.

The principal dyestuffs for brown are: Diamine Catechine B, G, 3G, Oxy Diamine Brown G, Diamine Brown R, B, M, 3G, Cotton Brown A, N. Cotton Dark Brown BB, BM. The browns may be darkened with Diamine Black HW, BH, or the various brands of Oxy Diamine Black.

Very good browns fast to washing, and specially serviceable as substitutes for Cutch can be produced with Diamineral Brown G, darkened if necessary with Diamine Brown B or Diamineral Blue R and aftertreated with bichromate of potash and bluestone.

244



2 % Oxy Diamine Brown G.

245



3 % Diamineral Brown G pat.
 aftertreated with
 1,5 % bichromate of potash
 1,5 % bluestone
 3 % acetic acid.

246



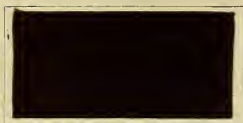
2 % Diamine Catechine G pat.

247



3 % Diamine Brown M pat.

248



3% Diamine Brown B pat.

249



3% Cotton Dark Brown BB pat.

Violet and Prune.

For violet, Diamine Violet, Diamine Heliotrope B, G, O are used, which are topped with Methyl Violet for very bright shades; for prune, Oxy Diamine Violet B, G, darkened if required with Diamine Black BH or Oxy Diamine Black.

Very bright shades are obtained by topping with Methyl Violet.

250



1% Diamine Violet N pat.

251



2% Diamine Heliotrope G pat.

252



0,75 % Diamine Violet N pat.
topped with
0,4 % Methyl Violet BB 72 No I.

253



3% Oxy Diamine Violet B pat.

Black.

For producing a cheap one-bath black, the various Oxy Diamine Blacks will be found useful; specially to be recommended are: Oxy Diamine Black BG, BM, D, AT, JEI, JW.

A better black with good fastness to washing and specially suitable for hose can be produced with Diaminogene B, Oxy Diaminogene OB or Diamine Black BH diazotised and developed with Phenylene Diamine.

254



5% Oxy Diamine Black BG pat.

255



5% Oxy Diamine Black D pat.

256



5 % Oxy Diaminogene OB pat.
developed with
 $\frac{1}{2}$ % Phenylene Diamine
 $\frac{1}{2}$ % Beta Naphtol.

257



5% Diaminogene B pat.
developed with
Phenylene Diamine.

Directions for Dyeing with Diamine Colours.

Pale shades are best dyed with addition of 1% soda ash and 5% soap, medium shades with about 10% and dark shades with 20 to 30% Glauber's salt; the dyeing is done at the boil for about one hour, when the bath is allowed to cool off. For dark shades, the bath should be small in volume, and be retained for dyeing future lots. After dyeing, the fabrics are rinsed cold without any other treatment; blacks should be given a warm soap passage with a little oil, or be slightly starched.

Diazotising and developing, or aftertreatment with bichromate of potash and bluestone are processes applicable to some dyestuffs for producing shades of very good fastness to washing such as are required for linen goods and also hosiery.

For both processes the garments are first dyed as afore stated, and rinsed. Diaminogene Black for example is dyed as follows:

The diazotising is done in a cold bath by treating the goods for 10 to 15 minutes in a solution of 3% sodium nitrite and 9% hydrochloric acid; for this treatment a wooden vessel is best suited, care being taken not to expose the goods to direct sunlight. Having been quickly

rinsed in cold water, the garments are developed in a fresh, cold bath for 10 to 15 minutes with 0,6% Phenylene Diamine and 2% soda ash, and finally soaped hot if found necessary.

Blue produced with Diaminogene Blue is treated in a similar way, but the developing is done with 1% Beta Naphtol (dissolved in its own weight of caustic soda lye of 77° Tw) instead of Phenylene Diamine.

The aftertreatment with bichromate of potash and bluestone is done in a hot bath with 1,5 to 2% bichromate of potash, 1,5 to 2% bluestone and 3% acetic acid.

The topping with basic dyestuffs is always done in a fresh bath with an addition of 5 to 10% acetic acid; it is well to begin cold and to heat the bath gradually to 120—140° F. The basic dyestuffs dye without a mordant on a bottom of Diamine Colours and become fixed fairly fast, provided they are not employed in excessive quantities, i. e. not more than $\frac{1}{3}$ — $\frac{1}{4}$ of the absorbed quantity of Diamine Colours; they should only be used for brightening the shades.

Should the above directions in certain instances not prove sufficient, all further details will be found in our pattern cards Nos 1974 and 2064.

B) Dyeing with Basic Dyestuffs.

These are chiefly useful for producing bright shades; we recommend the following in the first place:

Irisamine G pat.	Brilliant Green
Magenta	Solid Green
Cerise	Thioflavine T pat.
Safranine	Tannin Orange R pat.
Tannin Heliotrope	Chrysoïdine
New Methylene Blue pat.	Bismarck Brown
Indazine pat.	Tannin Brown.
Methyl Violet	

Directions for Dyeing with Basic Dyestuffs.

For very bright shades, the well cleaned goods must be mordanted in a warm bath for several hours with 2 to 5% tannin, according to the depth of the shade, followed by a treatment for $\frac{1}{2}$ hour in a cold bath of 1 to 3% antimony salt; after rinsing, the goods are ready for dyeing. Pale shades require weaker tannin baths than dark ones; too strong a mordant may cause insufficient penetration and uneven dyeings.

Whilst being mordanted and dyed, the goods should on no account come into contact with iron. In place of tannin, from 8 to 4 times the quantity of sumac or sumac extract may be used for less bright shades; for dark shades antimony salt may be replaced by pyrolignite or nitrate of iron which yield both pale and dark grey bottoms suitable for fixing basic dyestuffs.

The dyeing is done cold; the dye-bath is prepared with 5% acetic acid and 3 to 5% alum, to which the dyestuff, well dissolved, is added in several portions; the goods are quickly turned, the bath not being heated until nearly exhausted, nor made hotter than from 120—140° F.



258

1.5% New Methylene Blue N pat.



259

2% Irisamine G pat.



260

pat.



261

2% Safranin S No 150.



262

1% Methyl Violet 3B No 1.



263

1% Brilliant Green cryst. extra.

264



1.5% Tannin Heliotrope

265



2% Bismarck Brown EE.

On a sumac-iron mordant: -

266



2% Brilliant Green cryst. extra.

267



2% Bismarck Brown EE.

268



2% New Methylene Blue N pat.

If the cotton-dyeing with basic dyestuffs has to be done on goods composed of cotton and wool, or cotton and silk, and in which the wool or the silk have already been dyed with either acid or basic dyestuffs, the mordanting with tannin or sumac must be done cold, but in stronger liquors than for pure cottons, the rest of the operation being the same as recommended above. The dyeing proper has also to be done in perfectly cold liquors in order to prevent the wool or the silk from taking up too much dye. Should this happen in spite of precautions taken, a subsequent stripping with weak hydrochloric acid, or a lukewarm bath of soap, or soap bark, is to be recommended.

VI. The Dyeing of Linen and China-Grass.

The dyeing of linen and China-grass is done according to the same principle and with the same dyestuffs as used for cotton; the linen fibre being harder and more impenetrable than cotton, the greatest care must be taken in boiling before dyeing. Diamine Colours can be made to penetrate well by using only small quantities of Glauber's salt, and basic dyestuffs by mordanting in weak but hot liquors, and increasing the quantities of either acetic acid or alum added to the dye-bath.

VII. The Dyeing of Jute and Cocoa-nut Fibre.

Jute and cocoa-nut fibre may be dyed with Diamine Colours according to the same directions as for cotton, or with basic dyestuffs. In the latter case, mordanting with tannin is superfluous, as basic dyestuffs dye direct in a bath of 175—212° F. weakly acidulated with acetic acid. For goods which are difficult to penetrate, an increase in the quantity of acetic acid, or gentle boiling, will be necessary.

There are also a number of acid dyestuffs which are applicable with advantage for dyeing bright reds and blues on jute, amongst which special mention may be made of the Brilliant Croceïnes and Soluble Blues, all of which are dyed in a boiling hot bath with an addition of 5% alum and 5% Glauber's salt; the baths do not exhaust, and the first bath must therefore be started somewhat stronger.

As to the treatment before dyeing, it is in most cases sufficient if the goods be boiled in a weak solution of soda ash followed by a souring off with sulphuric acid; should bleaching be necessary, it can be effected by a treatment with Eau de Javelle (chloride of soda) and subsequent souring, or with permanganate and sulphurous acid.

Below we give a few patterns of dyed jute cloth; other shades are shown in our pattern card No 2022.



3 % Brilliant Croceïne M.



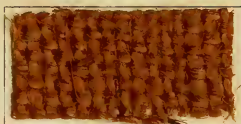
0,3 % Brilliant Green cryst. extra
1 % Chrysoïdine AG.

271



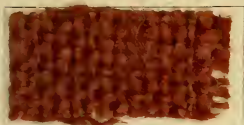
1,5% Diamine Green G pat.

272



1,5% Oxy Diamine Brown G.

273



2% Diamine Bordeaux B pat.

274*



1,5% Water Blue R.

275



2% Diamine Brown M pat.

276



3,5% Oxy Diamine Black JB pat.

277



4% Jute Black 9375.

*) Patterns marked with an asterisk are dyed on bleached jute.

VIII. The Dyeing of Straw and Chip.

(Plaits, hats.)

This material must first of all be scalded for a few hours in boiling water; full directions for dyeing have been given in our card No 2254. If hats etc., which are sewn with cotton, have to be given a further passage for the purpose of covering the stitches, this is done with Diamine Colours in a cold bath with an addition of $1\frac{1}{2}$ —1 lb Glauber's salt per 10 gallons. The dyes suitable in this case will be found mentioned on page 16.

IX. The Dyeing of Feathers.

Feathers should before dyeing be treated in a lukewarm, alkaline bath, in order to clean them and to strip the original colour, and should then be well rinsed. For dyeing, both acid and basic dyestuffs can be employed.

A) Dyeing with Acid Dyestuffs.

For Pink, Red, Claret.

For pink, the various brands of Eosine, Erythrosine, Phloxine and Rose Bengale; for red, the various Brilliant Scarlets and Brilliant Croceïnes, also Rocceline, Naphtol Red C, EB, Azo Rubine A, Azo Red A, Bordeaux BL.

Clarets can be obtained with the last named dyes by darkening them with Formyl Violet, Cyanole or Solid Blue R.

Pale Blue, Blue, Navy.

For pale blue and blue the various brands of Alkaline Blue are useful; navies are first of all grounded with either Alkaline Blue or Alkaline Violet, and darkened with Solid Blue R or Acid Green, or Formyl Violet and Naphtol Blue, or Naphtol Black, with or without the use of either yellow or red.

Yellow, Cream, Orange.

According to the shade required, the following dyestuffs are useful: Naphtol Yellow S, Acid Yellow AT, Indian Yellow G, R, Tropaeoline 00, Orange GG, Orange II, extra, ENZ.

Green and Dark Green.

For these shades the various brands of Acid Green or Brilliant Milling Green B are used, shaded with yellow if required. Naphtol Blue Black, Solid Blue R or Naphtol Black can be used for saddening.

Grey and Mode Shades.

These are produced with either Cyanole extra, Cyanole Green and Orange or Lanafuchsine, or with Aniline Grey or Nigrosine. The dyestuffs mentioned on pages 34—35 for silk are also well applicable for feather dyeing.

Brown and Olive.

For brown it is advisable to dye a bottom of Alkaline Blue, Solid Blue or Naphtol Black, and to complete the dyeing with Orange, Azo Rubine, Indian Yellow, Acid Green or Cyanole; for olive, larger quantities of yellow are necessary and less of red.

Violet and Prune.

For these shades the various Formyl Violets are suitable; for darkening, Roccelline or Azo Rubine with Cyanole or Acid Green may be used.

Black.

In the first place, the Naphtylamine Blacks 4B and 6B, Naphtyl Blue Black N or Naphtol Blue Black are suitable, shaded according to requirement with Indian Yellow or Orange extra; very good results may besides be obtained with Feather Black GS. The dyeing is best done in wooden vessels with concentrated dye liquors which can be kept for future lots.

Directions for Dyeing in Acid Baths.

The dyeing is done in slightly acid baths with the addition of sulphuric acid or bisulphate of soda; an excess of acid should be avoided in order not to injure the flue of the feathers. Pale shades are dyed lukewarm, dark shades at the boil; violent boiling is detrimental, and careful handling is necessary in order to keep the feathers from injury.

Naphtylamine Black 4B and 6B, also Naphtyl Blue Black N, are dyed with acetic acid instead of sulphuric acid; Alkaline Blue is dyed as indicated on page 15.

B) Dyeing with Basic Dyestuffs.

The dyestuffs enumerated on pages 27 and 28 are applied in hot neutral baths; very pale shades can also be dyed in a weak soap lather at hand heat.

X. The Dyeing of Skins and Rugs.

Previous to the dyeing the skins are cleaned in a weak solution of soda, sometimes also with the addition of soap, to free the hair from fat and above all to effect a thorough cleaning.

The dyeing is done with either basic or acid dyestuffs. The former need only be taken into consideration if no special fastness (to rubbing, light etc.) is required; they are applied by dipping the skins into their lukewarm solutions which contain some Glauber's salt. The dyestuffs enumerated on pages 27 and 28 can be used.

For the dyeing with acid dyestuffs, the skins require in the first place some preparation according to our patented process, consisting of a chrome bath which gives the leather resistance for the subsequent treatments, and a chloride of lime bath which increases the affinity of the hair for the dyestuff.

Ten sheep skins (previously prepared with alum and salt) weighing about 17 lbs, are treated in the following manner:

The skins well cleaned with soap are rinsed in water and dipped into a solution containing

1,8 oz chromium oxy chloride	} per 22 gallons.
3,6 „ basic sulphate of alumina	
3,6 „ common salt	
5,4 „ acetate of soda (cryst.)	

After leaving the skins for a few hours in the liquor the leather is tested by cutting in order to see whether it has been properly saturated by the liquor; if this be the case, another 3,6 oz chromium oxy chloride are added and the skins are left in the liquor for 24 to 36 hours, being given on occasional turn. They are then lifted, thoroughly rinsed, and hydroextracted.

The skins are then entered into a cold bath of $1\frac{3}{4}$ pints hydrochloric acid per 22 gallons water, where they are left for $\frac{1}{4}$ hour, and thereupon put into a chloride of lime bath (well dissolved and settled). Having worked them for about 20 minutes in the liquor, 12 oz ($\frac{3}{4}$ pint) spirits of salts are added, and they are worked for another ten minutes; they are then put back for another $\frac{1}{4}$ hour into the first bath of spirits of salts which has been strengthened in the meanwhile with another pint of hydrochloric acid. The skins are thereupon well rinsed. To the last (lukewarm) rinsing water, 3 to $4\frac{1}{2}$ oz hyposulphite of soda per 10 gallons are added, which is followed by a final thorough rinsing.

After hydroextracting, the skins may be dyed with any acid dyestuffs in baths up to 167° F. without fear of detriment to the leather. Care must however be taken to add the dyestuff in several portions and to keep the temperature low in the beginning, gradually increasing it to 167° F. The additions of bisulphate of soda, acids and Glauber's salt are similar as for wool.

The skins are well hydroextracted after dyeing, painted on the flesh side with a strong solution of common salt, and dried at not too high a temperature.

XI. Appendix.

The ground colours of the articles being an important consideration in the re-dyeing and frequently needing removal in order to obtain good results, it is well to mention some of the methods of stripping or decolourising the goods.

The processes chiefly resorted to are

- 1) Stripping in alkaline baths,
 - 2) Stripping with oxydising agents,
 - 3) Stripping with reducing agents.
-

1) Stripping in Alkaline Baths.

The alkalies employed are either soda carbonate or ammonia. The concentration of the stripping liquor depends upon the depth of the ground colour and the nature of the dyestuff it has been produced with. The bath must neither be too strong nor too hot, as it might otherwise injure the wool or the silk.

If the ground colours of the goods show a tendency to come off with alkaline liquors, an increased effect can be obtained by boiling in wheat bran. For this purpose the goods must be several times well washed in warm water after leaving the alkaline liquors and then be boiled for a short time in water containing 1 to 2 lbs wheat bran per 10 gallons.

2) Stripping with Oxydising Agents.

Those generally employed are either nitric acid, or bichrome and sulphuric acid; the goods must in either case be previously stripped and cleaned with soda solution.

The stripping with nitric acid is done at the boil by leaving the goods in a bath containing $\frac{1}{2}$ to 1 gallon nitric acid per 10 gallons until sufficiently decolourised. After a good rinsing, the garments are neutralised with alkali or ammonia. The resulting colour is generally a uniform, reddish yellow.

The stripping with nitric acid is best done in stoneware or wooden vessels; in place of nitric acid, sodium nitrite (4 to 6%) and sulphuric acid (8 to 12%) can be used.

The stripping with bichrome and sulphuric acid is likewise done at the boil; the usual quantities are 3 to 4% bichrome and twice the quantity of sulphuric acid, the treatment lasting about $\frac{1}{2}$ hour.

3) Stripping with Reducing Agents.

Of these, hydrosulphite of soda is the one exclusively employed of late; although somewhat more expensive than the afore named agents, it yields far better results.

Hydrosulphite is prepared as follows:

The commercial, liquid bisulphite of soda of 67° Tw. is diluted down to 32° Tw., $\frac{1}{2}$ pint of ammonia (0.9 sp. g.) added to each gallon, and $\frac{1}{2}$ lb zinc dust slowly stirred into this solution. After allowing to settle for $\frac{1}{2}$ hour, the clear solution is used.

The stripping bath is prepared by adding to each 25 gallons of water 1 to 2 gallons of the above solution, each gallon of which has been previously acidulated with 1 oz of acetic acid of 10° Tw. The goods are treated in this bath at the boil for 10 to 15 minutes.

Solution of hydrosulphite should not be preserved too long, yielding best results when prepared fresh for each special occasion.

Without guarantee.







NK8804 .C38g stack
Cassella Color Comp/Garment dyeing. Cass



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